

as new independent claim 11, in which it is clarified that the large-diameter contact hole and the small-diameter contact hole have a constant diameter portion on a lower portion thereof. Support of this claim language is seen in Figs. 3-6 and the detailed description contained in the specification. New claims 12-19 correspond to claims 3-10.

The primary reference Tsoi, and the secondary reference Roberts et al, McDavid and Miller et al have been extensively discussed in the earlier prosecution and, in the case of Roberts et al, McDavid and Miller et al, the Appeal Brief previously submitted in this case. The deficiencies of Tsoi, Roberts et al, McDavid and Miller et al vis-à-vis Applicant's claimed invention are of record, and the Examiner is respectfully directed to Applicant's earlier amendments and the earlier Appeal Brief, all of which are incorporated by reference.

It is not seen that the newly cited patent to Kim et al supplies the missing teachings to Tsoi, taken with Roberts et al, McDavid and Miller et al to achieve or render obvious the claimed invention. Kim has been cited as teaching "a method of forming metalization in a via . . . where the upper surface of the via is wider, which effectively reduces the aspect ratio." However, Kim like Roberts et al and Miller et al discussed at length in the earlier prosecution, and the earlier Appeal Brief fails to teach a device having both large and small-diameter holes. Kim et al's contribution to the art is to create tapered wall holes specifically to avoid problems in the prior art of constant diameter holes. See Kim et al Prior Art Figs. 1A-1E and cols. 1-2. Applicant's claim 11 requires that both the large diameter contact hole and the small diameter contact hole

have constant diameter portions on a lower portion thereof. Thus, and since Kim et al teaches against constant diameter contact holes, no combination of the several art references applied by the Examiner reasonably could be said to achieve or render obvious claim 11, or the several claims directly or indirectly dependent thereon.

New claims 20-28 have been added to further scope the invention, and are directed to another feature of the invention, namely, that the refractory conductive material covering the sidewall surface of the large-diameter contact hole has a thickness on the lower portion of the hole, equal to about half the diameter of the small diameter contact hole. This feature and advantage also cannot be achieved by the prior art, and results from the refractory conductive material being simultaneously deposited in the small diameter contact hole and the large diameter contact hole as previously claimed.

Having dealt with all the objections raised by the Examiner, it is believed that the application now is in order for allowance. Early and favorable action is respectfully requested.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account No. 08-1391.

Respectfully submitted,



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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Assistant Commissioner of Patents, Washington, D.C. 20231 on April 9, 2001, at Manchester, New Hampshire.

By Kristine Stevas

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